

### ***REMARKS***

As noted above, the Applicant appreciates the Examiner's thorough examination of the subject application.

Claims 1-20 are pending in the subject application. In the non-final Office Action mailed 28 April 2010, claims 1 and 11 were objected to and claims 1-20 were rejected on various statutory grounds, as described in further detail below. Claims 1 and 11 are amended herein for clarification of Applicant's invention. The amendment is supported by the original disclosure, e.g., paragraphs [0055]-[0056] and FIG. 1 of the specification as filed. No new matter has been added.

Reconsideration and further examination of the subject application is respectfully requested in view of the foregoing amendments and the following remarks.

#### ***Claim Objections***

Claims 1 and 11 were objected to for informalities. More specifically, it was stated that based on the specification claims 1 and 11 should recite "an elongated linear polymer layer with a thickness of about 4  $\mu\text{m}$  to about 275  $\mu\text{m}$ ."

In response, claims 1 and 11 have been amended in conformance with the Examiner's suggestion. Thus, the informality is believed to be overcome.

#### ***Claim Rejections – 35 U.S.C. § 112***

Claims 1-20 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. More specifically, the rejection alleged that support did not exist for the linear polymer layer thickness within the specific range of 4 microns to 275 microns, as recited in independent claims 1 and 11.

In response, Applicant notes that page 12, paragraph 40 of the specification reads that "the optical data storage tape is characterized by a thin (in the approximate range of 4 microns to 1000 microns). Thus, one skilled in the relevant art would appreciate (particularly by the use of the word "approximate") that the Applicant intended to be able to claim, at the time the

application was filed, any sub-range within the overall given range (including the end values). While the Office Action stated that the Applicant had given no explanation why operating between 4 and 275 microns is preferred over 4 microns to 1000 microns, Applicant respectfully submits that such a stated preference is not a requirement under 35 U.S.C. § 112, first paragraph. For at least the foregoing reasons, Applicant respectfully submits that the

### ***Claim Rejections – 35 U.S.C. § 103***

#### Claims 1, 2, 4-7, 9, 10, and 20

Claims 1, 2, 4-7, 9, 10, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,836,874 to Foster (“Foster”). Applicant traverses the rejection and requests reconsideration for the following reasons.

The independent claim subject to the instant rejection, i.e., amended claim 1, recites the following:

An apparatus for manufacturing pre-formatted thin tape linear optical data storage media including an elongated linear polymer layer with a thickness of about 4  $\mu\text{m}$  to about 275  $\mu\text{m}$ , comprising:

a **seamless drum** configured for rotation about a rotation axis, and including a circumferential outer surface having **a seamless surface** and a predetermined pattern of protrusions for embossing at least one pattern of optically readable embossments in an elongated linear polymer layer rolled on the drum; and

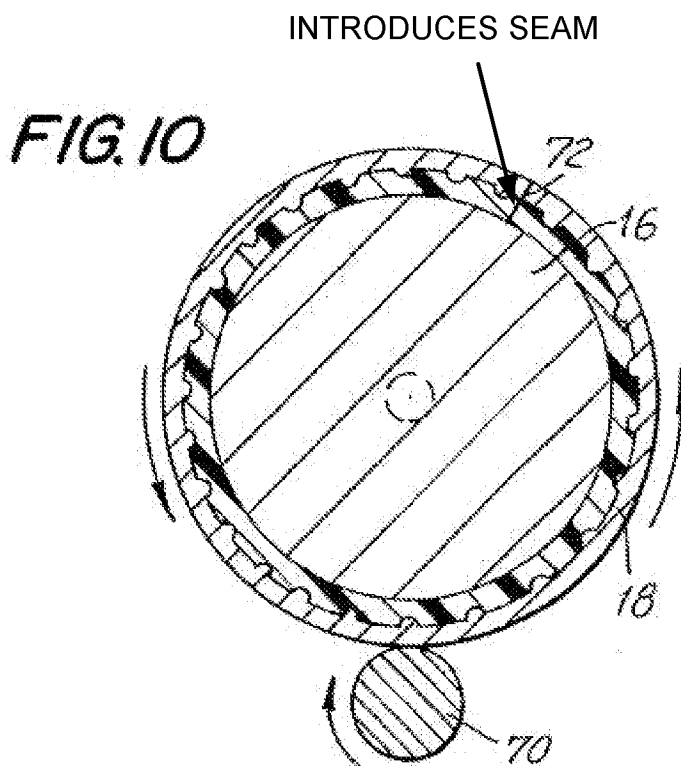
**a radiation source configured to cause the pattern of optically readable embossments** of the elongated linear polymer layer **to solidify prior to the embossments being removed** from the protrusions of the outer surface of the drum.

[Emphasis Added]

In contrast, Foster teaches making discs (CD’s, etc.). Foster does not disclose optical tape recording. Foster addresses making CD-type (i.e., discrete) optical media, which is significantly thicker than tape and requires a thick cover sheet. Moreover, the optical tracks taught by Foster are closed (spiral or concentric) and **not** “continuous” as would be the case for optical tape used/processed with Applicant’s claimed invention. Additionally, Foster’s process is

a **thermal** embossing process that uses laser/light energy to heat a substrate **after** lamination to deform the substrate for embossing. Foster does not disclose or suggest using a radiation source (e.g., producing UV or IR) to cure and harden a liquid layer.

Moreover, Foster does not teach or suggest a seamless drum. Instead, Foster discloses that its master roller includes a resin layer having a resin plug between abutting ends. *See* Foster, col. 6, lines 24-27 and FIG. 10, reproduced *infra*.



Thus, Foster fails to teach (or suggest) each and every limitation as arranged in amended claim 1, which is the base claim for the claims under rejection. Accordingly, Foster forms and improper basis for a rejection of claims 1, 2, 4-7, 9, 10, and 20 under 35 U.S.C. § 103(a).

Applicant respectfully requests that the rejection be removed accordingly.

Claims 3 and 11-19

Claims 3 and 11-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Foster, cited previously, in view of International Patent Application Publication No. WO 97/14142 to Norden (“Norden”) as evidenced by U.S. Patent No. 5,627,817 to Rosen et al. (“Rosen”). Applicant traverses the rejection and respectfully requests reconsideration for the following reasons.

Amended independent claim 11, the base claim of claims 12-19, recites the following:

A method for manufacturing pre-formatted linear optical data storage media including an elongated linear polymer layer, comprising:

softening a surface of an elongated linear polymer layer with a thickness of about 4  $\mu\text{m}$  to about 275  $\mu\text{m}$ ;

embossing at least one pattern of optically readable embossments in the softened surface of the elongated linear polymer layer using a seamless drum having protrusions on a seamless surface;

applying radiation and hardening the embossed surface of the elongated linear polymer layer prior to removing the linear polymer layer from the drum; and

winding the elongated linear polymer with the embossed surface layer into a roll.

[Emphasis added]

The deficiencies of Foster relative to claim 1, the base claim of claim 3 are described above. Foster is similarly deficient with respect to claim 11; in addition, Foster's process is quite different from Applicant's method of claim 11 in at least one other regard: Foster requires a very expensive and high powered gas laser to heat and thus soften and deform the polymer film. This is very different than applying radiation to harden a polymer layer, e.g., using a common heat lamp or UV lamp, as recited in Applicant's claims. Thus, Applicant's claims are patentably distinguishable over Foster.

Norden, described in Applicant's previous papers, is directed to methods of manufacturing read-only optical media and is not understood as curing the deficiencies noted previously for Foster relative to claim 1 or claim 11. At the very least, Norden fails to teach (or

suggest) **using a seamless drum** for embossing optical storage media (i.e., media that can be written to and erased), as recited in amended independent claim 1.

Moreover, one skilled in the art would appreciate that **Norden teaches away from combination with Foster**. Using Norden's solvent with Foster's high power laser would lead to dangerous results, since the laser's high energy density would instantly vaporize any residual solvent, badly distorting the polymer layer at best, and possibly igniting the solvent (once raised above the ignition temp) at worst.

Rosen is directed to a multiple data-layer dye-based optical disk drive. See, e.g., Rosen, col. 2, lines 27-30. Rosen is not understood as curing the deficiencies described for Foster and Norden relative to Applicant's claims 1 and 11.

Consequently, Applicant submits that the rejection of claims 3 and 11-19 under 35 U.S.C. § 103(a) over Foster in view of Norden and Rosen is improper. Applicant respectfully requests that the rejection be removed accordingly.

#### Claim 8

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Foster in view of U.S. Patent No. 6,162,519 to Takakuwa et al. ("Takakuwa"). Applicant traverses the rejection and requests reconsideration for the following reasons.

The deficiencies of Foster and relative to amended claim 1, the base claim for claim 8, have been described previously.

The secondary reference, Takakuwa, is directed to optical discs that are made from polyolefin polymers and related methods for making such discs. See, e.g., Takakuwa, col. 2, lines 17-26. The objective of Takakuwa appears to be improved birefringence using polyolefin substrates. Polyolefin films, however, are not stable in thin gages (e.g., they possess a taffy-like character). While Takakuwa is cited as teaching a method of writing recording marks using a laser cutting machine with a pattern based on desired data, such is not what is recited in Applicant's claims, e.g., claim 8. There is a significant difference between Takakuwa's "laser

cutting machine” and Applicant’s claimed optical head array. Takakuwa, in col. 13, lines 12-14, is *not* referring to a pattern replication process, but rather is referring to a typical laser beam recorder that is used as the mastering lathe in a CD/DVD mastering operation. Such a laser-based machine is typically a multimillion-dollar machine that is massive, cuts “open-loop” patterns (does not use pre-formatted tracks), requires climate controlled class-100 environment, and has a very extensive support infrastructure. Applicant’s claimed invention, on the other hand, is a mechanical mass-reproduction machine/process designed to produce very inexpensive copies of complex and expensive patterns such as made by the laser beam recorder described by Takakuwa.

Takakuwa is not understood as curing the deficiencies not previously for Foster with respect to claim 1.

Thus, the combination of Foster and Takakuwa, whether the references are considered alone or in combination, form an improper basis for a rejection of claim 8 under 35 U.S.C. § 103(a). Applicant therefore asks that the rejection be withdrawn accordingly.

The other claims currently under consideration in the application are dependent from their respective independent claims discussed above and therefore are believed to be allowable over the applied references for at least similar reasons. Because each dependent claim is deemed to define an additional aspect of the invention, the individual consideration of each on its own merits is respectfully requested.

The absence of a reply to a specific rejection, issue, or comment does not signify agreement with or concession of that rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be other reasons that have not been expressed for patentability of any or all claims of the application. Finally, nothing in this paper should be construed as an intent to concede, or an actual concession of, any issue with regard to any claim, or any cited art, except as specifically stated in this paper, and the amendment or cancellation of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment or cancellation.

### ***Conclusion***

For the foregoing reasons, Applicant submits that all of the claims under consideration in the subject application are in condition for allowance. A timely Notice of Allowance for the application is therefore earnestly solicited.

Should any questions arise, the Examiner is invited to call the undersigned.

Authorization is hereby given to charge our deposit account no. 50-1133 for any fees required for the prosecution of the subject application.

Respectfully submitted,

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